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**(54) FIXED ALGINIC ACID-THROMBIN PREPARATION,  
ITS PRODUCTION AND HEMOSTATIC AGENT**

**(57) Abstract:**

**PURPOSE:** To obtain a fixed alginic acid-thrombin preparation containing alginic acid and thrombin bonded with each other through an amide bond and having a thrombin activity comparable to that of thrombin before reaction.

**CONSTITUTION:** Alginic acid is made to react with an active esterifying agent in the presence of a water-soluble carbodiimide to obtain an active ester of alginic acid. The objective fixed alginic acid-thrombin preparation is produced by reacting the active ester

with thrombin. The product has a thrombin activity corresponding to about  $\approx 80\%$  of the activity before reaction and is useful as an organic component for a hemostatic agent or a hemostatic medical assisting material. The hemostatic agent is applicable to the diseased part or by oral administration. The fixed preparation can be used as a hemostatic medical assisting material by physically adsorbing the compound to a cotton, paper, nonwoven fabric, film, sponge, etc. It is resistant to the decomposition by gastric acid to prolong the retention time in the body and, accordingly the action period is prolonged. The preparation has excellent stability and storability.

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